POLYGNATHUS HINDE, 1879 (CONODONTA): PROPOSED DESIGNATION OF A TYPE-SPECIES UNDER THE PLENARY POWERS Z.N.(S.) 1796

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The purpose of this application is to request the International Commission on Zoological Nomenclature to use its plenary powers to ensure the stability of the name *Polygnathus* Hinde, 1879. *Polygnathus* is presently threatened because its type-species is based on a fragment, the generic and specific assignment of which is indeterminate.

2. *Polygnathus* was proposed as a new genus by Hinde (1879, p. 361–362) for *Polygnathus dubius*, which was based on about 30 discrete conodont specimens preserved on a single slab of shale from the Upper Devonian of New York, as well as for 19 other species, four of which were provisionally assigned to the genus, from various localities. Hinde did not designate a type-species for *Polygnathus*. Nor did Hinde select a holotype for *Polygnathus dubius*, presumably because he regarded the single slab as containing the remains of only one individual organism, a taxonomic opinion rejected by later specialists.

3. Miller (1889, p. 520) selected *Polygnathus dubius* as type-species of *Polygnathus*.

4. Bryant (1921, p. 23) attempted to restrict the concept of *Polygnathus* by referring only three of the specimens illustrated under the name *Polygnathus dubius* (Hinde, 1879, pl. XVI, figs. 16–18) to that genus. But Bryant's action has no nomenclatorial force, for he did not choose a lectotype for *Polygnathus dubius*.

5. Roundy (1926, p. 13) selected the specimen illustrated by Hinde (1879, pl. XVI, fig. 17) as lectotype of *Polygnathus dubius:* "I therefore propose that the genotype [type-species] *Polygnathus dubius* Hinde be restricted to the specimen shown on his Plate 16 as figure 17." Roundy stated that he had not seen Hinde's material. Nevertheless, according to the Code of Zoological Nomenclature (Art. 74), Roundy's designation must stand. Branson and Mehl's (1933, p. 146) selection of the specimen illustrated by Hinde (pl. XVI, fig. 18) as lectotype for *Polygnathus dubius* has no priority.

6. Ulrich and Bassler (1926, p. 43), Branson and Mehl (1933, p. 146) and Huddle (1934, p. 95) all stated that Bryant (1921) designated *Polygnathus pennatus* Hinde, 1879, as type-species of the genus. Nowhere in Bryant can an explicit statement to this effect be found. The above authors may have been misled by the fact that Bryant (1921, p. 23) placed *Polygnathus dubius (partim)* as represented by Hinde's specimen (pl. XVI, fig. 17) as a subjective synonym under *P. pennatus*. The discussion under paragraph 7 will attempt to show why this synonymy cannot be accepted.

7. The validity of the name *Polygnathus* rests on its type-species, *Polygnathus dubius* Hinde, which in turn rests on Roundy's lectotype. This specimen is an indeterminate fragment. Conodont specialists who have studied Hinde's type material are agreed in this conclusion. The lectotype is imbedded in a shale matrix which exposes only a lateral view of the specimen, thus making specific assignment impossible and generic assignment at least uncertain. Hass (1962, p. W58) suggested that the lectotype may belong to *Ancyrodella* Ulrich and Bassler, but to distinguish between *Ancyrodella* and *Polygnathus* an unobstructed view of the lower surface, at least, must be visible. Furthermore, there is no possibility of showing that the lectotype is in any way synonymous with what authors since Hinde have represented as *Polygnathus dubius*. Consequently, *Polygnathus dubius* is a *nomen dubium*, and the generic name, *Polygnathus*, is presently also a *nomen dubium*.

8. One may continue to regard *Polygnathus* as a *nomen dubium* and accept the earliest junior synonym as the name bearer of the concept, *Polygnathus*. However, we strongly advise against such a course of action. In the interest of nomenclatorial stability the name *Polygnathus* must be retained. It has had extensive, worldwide use for Devonian and Carboniferous conodonts since its proposal by Hinde and has recently assumed an importance in studies of conodont taxonomy and evolution. No beneficial purpose would be served by allowing a subjective junior synonym to take the place of *Polygnathus*.

9. Another possible alternative involves the use by the International Commission of its plenary powers to annul Roundy's designation of the specimen illustrated by Hinde (pl. XVI, fig. 17) as lectotype of *Polygnathus dubius*, and to permit the specimen illustrated by Hinde (pl. XVI, fig. 18) to be substituted. The latter specimen is imbedded in a shale matrix which exposes only the lower view. Seen only in this perspective there are at least two equally possible specific assignments for the specimen of Hinde's pl. XVI, fig. 18: *Polygnathus cristatus* Hinde, 1879, and *Polygnathus dubius* of authors. Thus, like Roundy's lectotype, the specific assignment of the specimen illustrated on Hinde's pl. XVI, fig. 18, is also in doubt. Substitution of the latter specimen as a new lectotype would not alter the fundamental situation described in paragraph 7.

10. A third alternative involves the establishment of a neotype for *Polygnathus dubius* to conform to the prevailing concept of the literature since Hinde. This course of action meets with two objections. First, there has been no " loss or destruction " of the type material of Hinde (1879), which is still available for study in the British Museum (Natural History). The second item is the fact that the stratigraphic (geological) horizon of Hinde's type material of *P. dubius* cannot be determined (John W. Huddle and the late W. H. Hass intensively studied the type locality of *P. dubius* at Eighteenmile Creek, near North Evans, New York, and have reached this conclusion; Huddle, personal communication, 1966). Thus, on two important counts, the conditions necessary for the establishment of a neotype (Code of Zoological Nomenclature, Article 75) for *Polygnathus dubius* are not fulfilled.

11. A fourth alternative involves the use by the International Commission of its plenary powers to annul the subsequent designation by Miller (1889, p.

520) of *Polygnathus dubius* as type-species of *Polygnathus* and to allow the establishment of a new type-species for the genus. Such a proposal was suggested earlier by Ziegler *et al.* (1964). We believe that this course of action has the optimum potential for ensuring the nomenclatorial stability of *Polygnathus*. We also believe that the new type-species should be a species based on a holotype that is a free specimen unimbedded in rock matrix. We emphasize the need for this last qualification, because adequate study of conodonts necessitates the viewing of all aspects of a specimen. It is for this reason that we do not advocate one of the other of Hinde's species of *Polygnathus* as the new type-species, because they are all based on specimens imbedded in shale matrix and, to a varying degree depending on which of Hinde's species might be chosen, *Polygnathus* would still have the doubtful status described under paragraph 7. Therefore, we propose that *Polygnathus robusticostatus* Bischoff & Ziegler (1957, p. 95–96), which is based on a holotype that is a free specimen, be selected as the new type-species of *Polygnathus*.

12. We therefore ask the International Commission on Zoological Nomenclature:

(1) to use its plenary powers to set aside all designations of type-species for the nominal genus *Polygnathus* Hinde, 1879, and, having done so, to designate *Polygnathus robusticostatus* Bischoff & Ziegler, 1957, to be the type-species of that genus;

(2) to place the generic name *Polygnathus* Hinde, 1879 (gender : masculine) type-species, by designation under the plenary powers in (1) above, *Polygnathus robusticostatus* Bischoff & Ziegler, 1957 on the Official List of Generic Names in Zoology;

(3) to place the specific name *robusticostatus* Bischoff & Ziegler, 1957, as published in the binomen *Polygnathus robusticostatus* (type-species of *Polygnathus* Hinde, 1879) on the Official List of Specific Names in Zoology.

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POLYGNATHUS DUBIUS HINDE, 1879 (CONODONTA): PROPOSED DESIGNATION OF A NEOTYPE UNDER THE PLENARY POWERS

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We are in agreement with paragraphs 1–9 of the proposal by Klapper, Lindström and Ziegler. However, in our opinion the designation of a neotype for *Polygnathus dubius* would be preferable for the following reasons:

1. *Polygnathus dubius* is a common and well-known species and it has been used extensively in North America, Europe and Australia (Clark and Ethington, 1967; Ziegler, 1962; Glenister and Klapper, 1966).

2. *Polygnathus dubius* was recognized as the basis for subzone designation in the Middle Devonian and, subsequently, the *Polygnathus dubius* zone has gained worldwide recognition as the lower zone of the standard Upper Devonian conodont sequence (Ziegler, 1962).

3. There is agreement among all conodont students as to the taxonomic content and concept of *Polygnathus dubius.*

4. Biologically distinct and geologically useful subspecies designations of *Polygnathus dubius* have been recognized. A name change for the species would result in a complex change for the subspecies, as well. For example, Ziegler and Klapper (in Ziegler, Klapper and Lindström, 1964, p. 422–423) proposed the name *Polygnathus asymmetrica ovalis* " for the concept centering around *P. dubia dubia* sensu Bischoff and Ziegler " illustrating the agreement concerning the concept of the species but also the fact that *Polygnathus dubia asymmetrica* Bischoff and Ziegler would become *Polygnathus asymmetrica asymmetrica.*

5. The proposed new type-species *Polygnathus robusticostatus* Bischoff and Ziegler, 1957, is a different kind of *Polygnathus* from *P. dubius.* Future taxonomic difficulties could result from a change in the concept of the type.

Because a designation of a new type specimen would avoid the difficulties arising from a new concept of the type and from a name change, it is suggested to annul the type specimen designation of *Polygnathus dubius.* A neotype could then be substituted.